

This Month's Editor's Choice by Ring and colleagues investigated potential environmental contamination during invasive ventilation and aerosol therapy in an ex vivo lung model. They ventilated porcine lungs at varying breathing patterns with and without aerosol therapy. Bacteriophage stock was introduced into the lungs and viral particles in exhaled gas were measured. They found no differences in exhaled viral RNA with and without nebulization. The authors concluded that aerosol therapy during invasive ventilation was not associated with increased fugitive aerosols. Saunders and Davis provide commentary noting that the study is limited to invasive ventilation and that a patient with an intact upper airway capable of coughing represents the greatest concern for fugitive aerosols.

Sancho and others evaluated the use of waveforms to assess mechanical insufflation-exsufflation (MI-E) in amyotrophic lateral sclerosis (ALS). Bulbar dysfunction in ALS can cause upper airway collapse, reducing MI-E effectiveness. The authors administered MI-E at equal inspiratory and expiratory pressures from 10–50 cm H₂O. Airway pressure and flow waveforms were evaluated for laryngeal collapse. They reported that airway collapse occurred in half of subjects during insufflation and 20% of subjects during exsufflation. The investigators concluded that airway graphics during MI-E can be used to guide therapy and avoid complications. Andersen and Vollsæter's accompanying editorial highlights the importance of measures beyond cough peak flow to evaluate the MI-E efficiency. In particular, the abrupt flattening of the expiratory flow curve suggests upper airway closure.

Burr and colleagues studied factors associated with a positive view of respiratory therapy leadership using a post-hoc analysis of a previous study evaluating burnout. The study consisted of over 1,000 responses, two-thirds of which included a positive view of leadership. Positive views of leadership were more likely in facilities with adequate staffing and were associated with fewer missed work days. Negative views of leadership were associated with burnout and more missed work days. Goodfellow suggests that innovative solutions are required to reverse attrition and job dissatisfaction in respiratory care. She suggests this likely will include implementing value-efficiency care to enhance the real and perceived value of the respiratory therapist (RT) at the bedside.

Behr et al studied respiratory therapy faculty views of interprofessional education (IPE) compared with other allied health faculty. IPE competencies included communication, teams and teamwork, roles and responsibilities, and ethics. Across the range of RT degree programs, faculty ranked communication first, followed by teams, and roles and responsibilities. Associate degree programs ranked teamwork lower than bachelor's and master's programs.

Danzy and others sought to assess staffing needs and the future of the RT profession prior to the COVID-19 pandemic. A survey was mailed to 618 AARC members in Louisiana and received a 19% response rate. Hospital-based RTs were more likely to describe poor staffing, and salary was identified as the most important staff concern. Room for growth and scope of practice followed salary as important factors. Seventy percent of respondents agreed that a bachelor's degree should be the entry level for practice. They concluded that RTs support the BS entry-level standard and desire higher education in an effort to achieve professional growth and advancement.

Terry and Ari studied the impact of the COVID-19 pandemic on RT student enrollment, retention, and success on the National Board for Respiratory Care credentialing exams. They retrospectively reviewed data from an associate degree program with 69 graduates over a 5-year period, 3 years before the pandemic and 2 years after. Student applications, enrollment, and retention were consistent across the time periods. They concluded that instructional changes implemented during the pandemic decreased students' first-time pass rate.

Polat et al retrospectively evaluated the risk of developing interstitial lung disease in subjects with COVID-19. Subject histories, laboratory results, imaging data, and treatments provided were analyzed. Subjects

had high resolution computed axial tomography (HRCT) scans 3-6 months post hospital discharge. Of 446 subjects, abnormal HRCT were found in 157 (35%). Development of interstitial lung disease was associated with older age in men and greater severity of disease.

Kaur et al performed a randomized clinical trial of adult subjects extubated after at least 24 h of invasive ventilation. They compared standard of care monitoring to automated monitoring using the integrated pulmonary index. They found no difference in reintubation rate, hospital length of stay, mortality, or ICU costs. They reported that RT time associated with patient assessment and therapy provided were significantly lower in the automated monitoring group. The authors concluded that the automated system to initiate RT-driven care saved time, despite failing to confer important patient outcomes.

Vest and coworkers performed a retrospective review of an existing database to evaluate the impact of timing of intubation based on the ROX index in COVID-19. Multivariable logistic regression was used to evaluate the impact of ROX on mortality. ROX was analyzed as a continuous variable as well as a categorical variable using pre-defined cutoffs predicting success of high-flow nasal cannula (HFNC). In over 1,000 subjects, increasing age and longer time from admission to intubation were associated with mortality. After adjusting for sex, race, age, comorbidities, and days from admission to intubation, higher ROX score at time of intubation was associated with lower mortality.

Gutiérrez Martínez et al evaluated the safety of peak inspiratory pressures (PIP) during lung recruitment in a neonatal porcine model of respiratory distress. They defined the PIP and mean airway pressure (\bar{P}_{aw}) at which pneumothorax was produced by increasing PEEP in 2 cm H₂O increments. Pneumothorax was observed at \bar{P}_{aw} 54 cm H₂O and PIP 65 cm H₂O. Hemodynamic changes were seen at far lower airway pressures. They concluded that hemodynamic monitoring is critical for safe application of recruitment maneuvers.

Xie and others retrospectively reviewed changes in early respiratory support management and the impact on outcomes and complications in preterm infants over a 13-year period. Time was divided into three 3-y periods from 2007 to 2020. Outcomes included mortality, incidence of bronchopulmonary dysplasia (BPD), complications, initial respiratory support, and duration of ventilation. There was a marked reduction in use of invasive ventilation and a fall in incidence and severity of BPD. Notably, other complications including pneumothorax, pulmonary hemorrhage, necrotizing enterocolitis, intraventricular hemorrhage grade III/IV and periventricular leukomalacia, were unchanged.

Nair and others performed a matched cohort study of preterm infants (< 32 weeks) with and without unplanned extubation (UE). The main outcome variables were duration of ventilation, hospital length of stay, BPD, and retinopathy of prematurity (ROP). Infants suffering UE had longer ICU and hospital stays, but no increase in BPD. They concluded UE resulted in longer durations of ventilatory support, but these were not associated with a greater risk of ROP and BPD.

Hazamaki et al provide a short report on adverse events during early mobility in subjects with COVID-19. Despite subject severity of illness, they did not find an increased incidence of adverse events in this population. Feinstein et al contribute a short report on the results of a survey regarding vaping habits of patients scheduled for elective surgery. They noted that many respondents were not asked about vaping history, and a number of respondents did not identify vaping as a form of smoking.

Cardinal-Fernández et al provide a systematic review of the application of automatic tube compensation (ATC) during a spontaneous breathing trial (SBT). They report that ATC was associated with the highest probability of extubation success, but not SBT success. Kallet and colleagues provide a narrative review of silent hypoxemia in the context of COVID-19. This paper reviews the physiology of silent hypoxemia and the misconceptions that have promulgated during the pandemic.